



CSIR-North East Institute of Science & Technology, Jorhat

Connecting Science & Technology for a Brighter Tomorrow

Message from Director General, CSIR

My dearest CSIR family members,

You are all aware that we are passing through an unprecedented situation at this time, seen rarely in the history of the mankind. You would have learnt from many different sources that the magnitude of the situation has not been encountered by humanity in a long... long... time. It is pertinent to note that the disease, now called as COVID-19, caused by the virus- Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), transcends all categorizations of classes, colours, religions or Nationality of individuals and attacks all with equal ferocity. Therefore, it is time for all of us to sit back, introspect and resolve collectively how we are going to win this war by defeating the virus.

It is understood that there will be disruptions in terms of our day-to-day lives, economies, jobs, livelihoods of people, and also a significant toll on human life, but if we unite ourselves, we can resolve to get out of it with minimum damage. It is utmost important that CSIR family and extended family follows the Government instructions very closely. For example, when the Government has advised for social distancing, the advice must be followed strictly by all of us and by all our family members. We have to remember that any deviation from such advices not only puts us and our family members at risk, but also increases the risk of transmission to other individuals many fold. This war cannot be won by few doctors, Governments, policy makers, health care individuals, but rather by collective actions of all of us. I therefore urge you all and your families to take all necessary precautions to stay safe during the pandemic.

As a proud CSIR family member, I would like to bring to your attention the proactive role CSIR is playing in COVID-19 mitigation. We at the collective leadership level of CSIR have decided to focus on five broad areas, namely, (1) surveillance including digital methods, (2) rapid and cheap diagnosis, (3) development of new therapies,

including new drugs, repurposing of known drugs and vaccines, (4) hospital assistive devices and (5) supply chain and logistics involved in each of these, where we believe the expertise of CSIR Scientific Community can be effectively leveraged to compliment the National efforts on tackling COVID-19 emergency. Work has begun on war footing on all these five areas. In this work, not only different pan-CSIR teams have been formed, but also through our flagship NMITLI programme, we are seeking academia and industry to join us to find innovative solutions. In the coming time, we have to ensure that we bring the best out of CSIR minds in these areas and provide solutions to the society for which we will be known in the future. If there was ever any moment in our history that we needed to challenge ourselves to find innovative solutions to the most important problem, I believe this is that moment.

To paraphrase Swami Vivekananda- I urge the entire scientific community of CSIR to rise, awake and stop not until we have discovered truly innovative solutions in these five areas. If any of you would like to join the collective efforts, there is space to accommodate other ideas and initiate work on those, if found suitable. I will keep you updated on progress of these initiatives. I will soon be addressing all the CSIR family on web, and I request all of you to join me in the address.

I would once again like to remind everyone that wars are fought with valorous soldiers, brave men, armies and with weapons. The current war is being fought by healthcare providers, scientists, technologists, industrialists, politicians, administrators all together, by men and women, old and young, of all creeds, united by a single goal. I urge you all in the CSIR Family to be a part of this war and fulfill justifiable expectations of us by the Nation through our scientific and technological prowess. We have done it in the past, I am sure we can do it again. Stay safe, stay protected from COVID-19.

Shekhar C. Mande

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Hussain Zaheer Memorial Bridge and MGK Menon Memorial Chess Tournament held at CSIR-NEIST



Inauguration of the Hussain Zaheer Memorial Bridge and MGK Menon Memorial Chess Tournament of SSBMT at CSIR-NEIST.

The Hussain Zaheer Memorial Bridge and MGK Menon Memorial Chess Tournament was held at CSIR-NEIST Jorhat during 2-4 March 2020 where participating teams from different CSIR labs participated. The inaugural function and oath taking ceremony of the tournament was held on 2nd February 2020 where all employees and scientific staff were present. Dr. G Narahari Sastry, Director, CSIR-NEIST delivered the welcome address and Dr. Arun Kumar Sarma, Director General, NECTAR, DST participated as the Chief Guest of the function. The tournaments are being organized annually at Zonal level under the Shanti Swarup Bhatnagar Memorial Tournament (SSBMT) of the CSIR Sports Control Board with participation of all CSIR employees spread across the country. The tournaments are being organized every year, alternately for indoor and outdoor games at different venues of CSIR labs across the country. The tournament was held for indoor games at the Staff Club of CSIR-NEIST Jorhat.

CSIR-NEIST Celebrate International Women's Day

CSIR-NEIST celebrated the International Women's Day and organized a training programme on Mushroom Cultivation to lady members of Self Help Groups of nearby villages on 9th March 2020. Speaking on the occasion, Dr. G. Narahari Sastry, Director CSIR-NEIST emphasised upon discrimination against women and gender biasness. In general women face bias at workplace and there is gender parity problem at senior levels. He mentioned the need of understanding the diversity and need of co-existence between both men and women to develop the country. Dr. Sastry also suggested women to be bold enough to speak the truth and to create a group circle who will discuss about the discrimination, gender biasness and the action to be taken against those discrimination. Dr Manab Jyoti Bordoloi, HoD, CSTD and Dr. Saurav Baruah, Head of GSTD also spoke on the occasion and congratulated women employees of CSIR-NEIST for their contributions. Multiple presentations were given by women employees of NEIST about different women achievers who were involved in changing world by their contribution in science and society, their fight and struggle against gender biasness.



Dr. G. Narahari Sastry, Director CSIR-NEIST addressing the International Women's Day with other dignitaries on the dais.

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Interactive Meeting held at CSIR-NEIST for Local Entrepreneurs and Innovators

CSIR-NEIST organised an interactive meeting for local entrepreneurs, innovators, scientists and students with Dr Arun K Sarma, Director-General, North East Centre for Training and Research (NECTAR), Shillong. Dr G Narahari Sastry, Director CSIR-NEIST encouraged the budding entrepreneurs to have some clear set goals and in depth market survey to achieve their entrepreneurial dreams. Honey beekeeping, Floriculture, Bamboo and Mushroom cultivation are some areas that is currently pursued with keen interest and which have huge potential for the development of NE region, he mentioned. Dr Sarma presented the various programmes and Vision of NECTAR in the North East region and showed the applications of technologies successfully implemented for large scale Mushroom production, Honey bee farming, water, Flood mitigation, etc. Dr Sarma informed that NECTAR is planning to set up Techno Demo Center at Guwahati which will be the hub of various technologies from India and abroad as well. Dr Sastry requested for establishment of such Centre at Jorhat and mentioned the need to set up large scale Mushroom Production Centre in collaboration with NECTAR and said that a detailed proposal will be submitted very soon.



An interactive meeting organised for local entrepreneurs, innovators, scientists, and students at CSIR-NEIST on honey beekeeping, floriculture, bamboo and mushroom cultivation, .

Distributes Alcohol based Hand Sanitizers

As the world faces one of the biggest health crisis due to the outbreak of COVID-19 pandemic causing unprecedented challenges to social, health and economic well being, CSIR-NEIST worked continuously and has undertaken various initiatives to tackle the situation. Dr G Narahari Sastry, Director visited different divisions of the laboratory to spread awareness about the rules to be followed for the prevention of novel coronavirus. He also visited Research Scholars hostels along with Medical Officers for spreading awareness and thermal screening of all the students and caretakers was done at the hostels.



Dr G Narahari Sastry visits different divisions and departments, Research Scholars Hostels to spread awareness about the rules to be followed for the prevention of Coronavirus. He also visited Girls and Boys Hostels along with Medical officers for the awareness and thermal screening of all the students and caretakers also done.

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Under the leadership of its Director, Dr G Narahari Sastry, CSIR-NEIST has adopted various preventive measures right from the beginning by preparing and distributing hand sanitizer to various establishments and locations in the district. About 400 litres of hand sanitizer was prepared and distributed throughout its campus and various other establishments like State Bank of India, RRL Branch; Kendriya Vidyalaya; Post Office; Jorhat Airport; District Administration including Police Stations; Airforce Station, Jorhat; District Session Court and Railway Station, etc.



Distribution of hand sanitizer in Jorhat Airport and Railway Station, Jorhat by CSIR-NEIST on 20 March 2020. Dr G Narahari Sastry, Director, CSIR-NEIST handing over hand sanitizer to Airport Manager, Jorhat (top). A group of CSIR-NEIST Scientists handing over hand sanitizer to the Station Superintendent Jorhat (bottom).

Dr Sastry along with a team of Scientists and staff visited Jorhat Airport on 20 March 2020 and briefed about various precautions to be taken for preventing spread of coronavirus outbreak. Dr Sastry also handed over the Hand Sanitizers that have been formulated at CSIR-NEIST to the Airport Manager for sanitizing incoming and outgoing passengers, airport officials, security personnel, and also the Medical Team stationed at the Airport. A team of Scientists and staff visited Railway Station and briefed about the various precautions to be taken for the prevention of Coronavirus outbreak. The team also handed over the Hand Sanitizers to the Station Superintendent for sanitizing incoming and outgoing passengers, officials, security personnel at the station. As per instruction by Dr. Sastry awareness poster along with pamphlet distribution was also done. In their relentless efforts during the last one or two months the staff, scientists, engineering, administration and COVID team often working more than 15 hours a day has collectively risen to the occasion to serve the nation. CSIR-NEIST also produced hand sanitiser, liquid hand wash, disinfectants, home made masks which were distributed to police stations, district administration



A team of Scientists from CSIR-NEIST visited Airforce Station, Jorhat and handed over a few litres of CSIR-NEIST made hand Sanitizer for use by the Airforce personnel.

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offices, post offices, banks, ONGC, BCPL, District and Sessions Judge Court, FCI, Indian Air Force Station in the past one month.

CSIR-NEIST Branch Laboratory, Imphal has prepared more than 100 litres of hand sanitizer and distributed to officials of NABARD bank, Manipur University, district municipality, media personnel, and other officials working in fighting COVID such as doctors, professors from Jawaharlal Nehru Institute of Medical Sciences, Imphal. To further increase its mass production, the branch lab has



As a part of COVID 19 preventive measure around 110 spray bottles of Hand Sanitizer formulated at the CSIR-NEIST Branch Lab Imphal and distributed to officials of NABARD, Bank, hospitals, university, press media, municipality, etc. The formulation is made with ethyl alcohol and plants extract.

joined hands with a local firm based in Imphal on 12 April 2020.

Alcohol-based Herbal Hand Sanitizer formulated by CSIR-NEIST Branch Lab Imphal, Manipur was officially launched by Dr RK Ranjan, Member of Parliament, Manipur in the presence of other officials like Pro-Vice Chancellor and Registrar of Manipur University; doctors and professors from Jawaharlal Nehru Institute of Medical Sciences, Imphal and many more officials from state and central govt. departments on 10 April 2020 at the Conference Hall of the Branch Lab, Imphal. A total of about 13 litres of the hand sanitizer has been produced so far and provided to the officials working in fighting COVID-19 and media personal. As desired by Dr Sastry, the formulation know-how of the Hand Sanitizer has been shared with Marjing Industries, Imphal with no technology cost and they are now in production of the Hand Sanitizer.

CSIR-NEIST Scholars Donate Fund and Ladies Club Non-perishable Food Items

The Research Scholars working in CSIR-NEIST have contributed an amount of Rs 54,201 to the Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund. The collected amount from all the students was transferred through State Bank of India online payment portal.

The worldwide COVID-19 pandemic situation and the continuous lockdown for a month in the country is wreaking havoc on the day to day life of people who are daily wagers, drivers, tailors, laundry man, etc. To support these poor people during the crisis the NEIST Ladies Club has made an effort to distribute some non-perishable food items like pea, Masoor dhal, chana dhal, Chickpea, Mustard oil, Jaggery, Atta, flattened rice, Soap, etc. to the families of neighbouring villages who are regular visitors to NEIST Colony as domestic helpers, maids, drivers, etc. It has been possible due to the contribution received from the families of NEIST Colony. The members of the NEIST Ladies Club also offered sincere gratitude to Dr G Narahari Sastry, Director, CSIR-NEIST Jorhat for his support in all aspects.

Imagination is more important than knowledge

Albert Einstein

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Distribution some of non-perishable food items to domestic helpers, maids, drivers, etc. by members of the Ladies Club of CSIR-NEIST.

COVID-19 Web Portal launched by CSIR-NEIST, Jorhat

CSIR-NEIST in its endeavour towards societal responsibilities launched its own web portal to create awareness on COVID-19 and to keep the masses updated on the new developments on the pandemic situation. The portal was formally launched on 6 May 2020 by Dr G Narahari Sastry, Director which can be accessed as www.neist.res.in/covid19. The basic focus of the web portal is to disseminate knowledge and create awareness on COVID-19 pandemic in the society at large. The portal has been classified into various sections viz. a home page, dedicated on the background and history on the origin of

novel coronavirus; therapeutics; CSIR activities; epidemiology, pandemics; MPDS COVID-19; resources; myths and truths and a blogging page. The portal caters to highlight upon the research activities being undertaken by the various CSIR laboratories in the wake of COVID-19 pandemic such as molecular digital surveillance, development of rapid and cheap diagnostic kit, new therapies development and drug repurposing, development of personal protective equipment kit (PPE) and supply chain etc. especially to apprise common people, the research fraternity and the industry as a whole. It may be mentioned that the sections on popular myths and facts on COVID-19 and blogging platform are added features which can be used to voice ones thoughts, opinions and concerns on the issue. In totality the portal is a window to the global happenings revolving around the novel coronavirus pandemic. It may be mentioned that CSIR-NEIST has been playing a pivotal role in its societal mission under the dynamic leadership of Dr G. Narahari Sastry, Director of the laboratory.

COVID-19 testing laboratory inaugurated in CSIR-NEIST

A new COVID-19 testing laboratory has been established on 30 May 2020 in the Jorhat Campus of the North East Institute of Science and Technology (NEIST). Dr Himanta Biswa Sarma, Minister of Health and Family Welfare, Finance, Education (Higher, Secondary and Elementary), Transformation and Development, PWD, Govt. of Assam, inaugurated the laboratory. The Director of CSIR-NEIST, Dr G. Narahari Sastry, described this momentous event as an important milestone in the annals of CSIR-NEIST history.

Appreciating the fact that NEIST is the first Research and Development institute in Assam to open up a testing facility, Dr. Himanta Biswa Sarma congratulated the scientists and staff of the institute for making it happen.

Dr Sastry mentioned that a team of 10 scientists of the institute are actively involved in isolation of RNA from the virus besides 40 other staff members

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Dr Himanta Biswa Sarma inaugurating the COVID-19 testing laboratory at CSIRNEIST in the presence of director of the institute Dr G. Narahari Sastry, Director of CSIR-NEIST.

are acting as a support system. The institute's Biotechnology Division is playing a pivotal role in carrying out RT-PCR based COVID-19 testing. Besides, the Govt. of Assam and the district administration of Jorhat are actively cooperating and facilitating the efforts put in by the institute.

A microbiologist from the Department of Health and Family Welfare, Govt. of Assam has been engaged with the institute's COVID-19 testing laboratory to certify the testing. The samples for the testing are expected to be obtained in coordination with the state government and the district administration of Jorhat. The institute has also contractually engaged a Project Scientist and a Research Scholar for the testing purpose.

Sarma also took stock of the kind of scientific programs, research, technologies and products of the institute. He was quite happy to learn about the

technologies that were patented and commercialized by NEIST. Some of the noteworthy achievements that have been commercially translated include the herbal anti-arthritis ointment, anti-fungal ointment, new varieties of aromatic plants.

"Establishment of the COVID-19 testing laboratory here is the demand of the hour, as it is the most effective and globally successful approach to test, trace, isolate the virus before it gets dispersed to community transmission level. Assam is at the threshold point of crossing over to stage 3 which is the community level transmission stage", said Dr Sastry.

He further added that the only way to mitigate and contain the situation is to carry forward with extensive testing, and the ray of hope is the will of lakhs of people to fight the pandemic. At the same time, the challenge is that the capacity to do so lies in the hands of only a few people. Thus, the paramount task of the scientific community is to carry out as many tests as possible to keep a tab on the virus and to develop effective drugs and vaccines for a sure shot cure.

CSIR-NEIST Connects Remote Villages through Live Webinar

CSIR-NEIST has taken initiative to connect 400-700 remote villages in North East India through live Webinar. It is an attempt taken under the leadership of Dr. G N Sastry, Director to empower farmers, entrepreneurship development in villages and for the welfare of migrant workers and poor farmers. He informed that the on-line programe is part of a comprehensive plan of CSIR and CSIR-NEIST's active role in North East India to adapt and connect to more than 500 villages through the programs of STINER, Aroma Mission once the lockdown is lifted and see how entrepreneurship in agri, nutri foods of CSIR working in these villages, revitalising CSIR-NEIST to strengthen the economics of North East India. In addition to the 500 adapted villages, he said a survey and documentation will be made on the available traditional knowledge of rural areas.

Imagination is more important than knowledge

Albert Einstein



LIVE WEBINAR
STINER
ATTEMPT TO CONNECT
500 VILLAGES OF
NORTH EAST INDIA
A CSIR-NEIST INITIATIVE

FOR LINKS PLEASE VISIT
STINER WEBSITE
www.neist.res.in/stiner

OBJECTIVES

- EMPOWERING FARMERS
- INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT
- ISSUES OF MIGRANT WORKERS
- HAND-HOLDING POOR FARMERS

LISTENING TO
THE ISSUES OF
VILLAGERS

2nd JUNE 2020
3.00-4.30 PM

SPEAKERS

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|  DR. G.N. SASTRY Director, CSIR-NEIST |  DR. K. KARTHIKEYAN CEO, NEATEHUB, AIC-AAU |  PROF. V. RAVISHANKAR Director, NID, Jorhat |
|  DR. M. J. BORDOLOI Chief Scientist CSIR-NEIST |  DR. SAURABH BARUAH Chief Scientist CSIR-NEIST |  DR. JATIN KALITA PI, STINER CSIR-NEIST |
|  DR. LAKSHMI SAIKIA CONVENER |  DR. MANTU BHUYAN PI, STINER |  DR. MOHAN LAL CO-CONVENER |

CSIR-NORTH EAST INSTITUTE OF SCIENCE AND TECHNOLOGY
Jorhat-785006, Assam

Dr G. Narahari Sastry, Director of CSIR-NEIST along with other invited speakers and scientists connect to remote villages through live Webinar.

Lecture Series on COVID-19 held under NEIST Science Forum

- Speaker:** Dr Leon Raj, Scientist
Topic: COVID-19: Statistics and analysis
Date: 20 April 2020
- Speaker:** Dr Santanu Baruah, Senior Scientist
Topic: The coronavirus: A geopolitical earthquake
Date: 21 April 2020
- Speaker:** Dr Lakshi Saikia, Senior Scientist
Topic: Impact of COVID-19 on scientific community and an approach from nanotechnology point of view
Date: 22 April 2020
- Speaker:** Dr Gakul Baishya, Senior Scientist
Topic: COVID-19 and repurposing of FDA approved drugs candidates
Date: 23 April 2020
- Speaker:** Dr Dipanwita Banik, Senior Scientist
Topic: Taking leads from ancient Indian Traditional Knowledge: Potential prophylactic measures against COVID-19
Date: 24 April 2020
- Speaker:** Er Dipankar Neog, Principal Scientist

Topic: Scope of using bamboo based structures in temporary shelters, hospitals, etc. during different disaster situations

Date: 27 April 2020

Speaker: Dr Chandan Tamuly, Principal Scientist

Topic: COVID-19 (SARS-COV-2) and role of medicinal plants

Date: 28 April 2020

Speaker: Er Vaskar Rakhowa, Superintending Engineer (C)

Topic: COVID-19: The positive side

Date: 29 April 2020

Speaker: Dr Bijit Kumar Choudhury, Scientist

Topic: COVID-19 blessing in disguise?

Date: 30 April 2020

Speaker: Dr Rinku Baishya, Scientist

Topic: COVID-19: Pathogenesis, Immune response and role of antioxidants

Date: 01 May 2020

Speaker: Dr Mantu Bhuyan, Principal Scientist

Topic: Strategy of employment generation in rural area of Assam under post COVID-19 condition

Date: 04 May 2020

Speaker: Dr Subrata Ghosh, Senior Scientist

Topic: A scientific outlook of post-COVID-19 and preparation for battle

Date: 05 May 2020

Speaker: Dr. Manashi Sarmah, National Post Doctoral Fellow (N-PDF)

Topic: COVID-19: Its impact on unemployment rate, oil, gas and chemical organizations

Date: 06 May 2020

Speaker: Dr Arup Roy, Scientist

Topic: Structural basis for the development of pre and post-infection therapies for COVID-19

Date: 08 May 2020

Speaker: Dr G Narahari Sastry, Director

Topic: Role of science and technology in the times of wars, pandemics and natural disasters

Date: 11 May 2020



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Speaker: Dr Debasis Mohanty, Scientist

Topic: Earth response to COVID-19

Date: 12 May 2020

Speaker: Dr Dipul Kalita, Principal Scientist

Topic: Impact of COVID-19 lockdown on agriculture and allied sectors

Date: 13 May 2020

Speaker: Er Deepak Basumatari, Senior Scientist

Topic: COVID-19 outbreak and its impact in construction sectors

Date: 14 May 2020

Speaker: Dr D Banik, Senior Scientist

Topic: India's Traditional Knowledge towards fight against COVID-19

Date: 15 May 2020

Speaker: Dr L Saikia, Senior Scientist

Topic: Impact of COVID-19 on scientific Community and an approach from Nanotechnology point of view community and an approach from nanotechnology point of view

Date: 18 May 2020

Speaker: Dr Saikat Halder, Scientist

Topic: Aromatic herbs for the management of COVID-19 pandemic and post COVID socio-economic upliftment: Individual to community

Date: 19 May 2020

Speaker: Dr Archanamoni Das, Principal Scientist

Topic: Novel coronavirus (nCoV-19) pandemic: Its perspective and scientific intervention

Date: 20 May 2020

Speaker: Dr Ram Awatar Maurya, Scientist

Topic: An overview of COVID-19 drug development

Date: 21 May 2020

Speaker: Dr Prasenjit Saikia, Senior Scientist

Topic: Coronavirus pandemic: Retrospection towards clean energy harvesting in India

Date: 26 May 2020

Speaker: Dr N Velmurugan, Scientist

Topic: Recombinant antibodies for COVID-19:

Engineering and production

Date: 28 May 2020

Papers Published

Gogoi Monti, Goswami RL, Ingole PG, Hazarika Swapnali: Corrigendum to "Selective permeation of L-tyrosine through functionalized single-walled carbon nanotube thin film nanocomposite membrane. In: *Journal Separation and Purification Technology*, 2020, Vol. 244, pp. 116841.

Saikia Monikankana, Das Tonkeswar, Dihingia Nikalabh, Fan Xing, Silva Luis F O, Saikia Binoy K: Formation of carbon quantum dots and graphene nanosheets from different abundant carbonaceous materials. *Diamond and Related Materials*, 2020, Vol.106, pp. 107813.

Hazarika Hemanta, Gogoi Pranjali: Direct synthesis of ortho-methylthio allyl and vinyl ethers via three component reaction of aryne, activated alkene and DMSO. *Organic and Biomolecular Chemistry*, 2020, Vol.18(14), pp. 2727-2738.

Bordoloi Manobjyoti, Sahoo Ranjan K, Tamuli Kashyap J, Saikia Surovi, Dutta Partha P: Plant extracts promoted preparation of silver and gold nanoparticles: A systematic review. *Nano*, 2020, Vol.15(2), pp. 2030001.

Suri Mrinaly, Hussain Farhaz Liaquat, Gogoi Chinu, Das Pankaj, Pahari Pallab: Magnetically recoverable silica catalyzed solvent-free domino Knoevenagel-hetero-Diels-Alder reaction to access divergent chromenones. *Organic and Biomolecular Chemistry*, 2020, Vol.108(11), pp. 2058-2062.

Dhrubajit Borah, Biswajit Saha, Bipul Sarma, Pankaj Das: A new PEPPSI type n-heterocyclic carbene palladium(II) complex and its efficiency as a catalyst for Mizoroki-Heck cross-coupling reactions in water. *Journal of Chemical Sciences*, 2020, Vol.124(14), pp. 7652-7660.

Moumita Kar, Supriya Saha, Ritabrata Sarkar, Sougata Pal, Pranab Sarkar: Comparative study on the photovoltaic properties of ZnX (X = S, Se, Te) QD/CNT inorganic/organic hybrid nanocomposites.



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The Journal of Physical Chemistry C, 2020, Vol.124(14), pp. 7652-7660.

Pranjit Kumar Bora, Phirose Kemprai, Rubi Barman, Debabrata Das, Aamir Nazir, Siddhartha Proteem Saikia, Dipanwita Banik, Saikat Haldar: A sensitive ¹H NMR spectroscopic method for the quantification of capsaicin and capsaicinoid: Morpho-chemical characterisation of chili land races from North East India. *Phytochemical Analysis*, 2020, pp. 1-13.

Somananda Thokchom, Deshworjit Singh Ningombam, Huidrom Birkumar Singh: Legacy of traditional beverages with the Chakpa community of Manipur, North East India. *International Journal of Scientific Research*, 2020, Vol.9(3), pp. 42-44.

Jitu Saikia, Rajib Lochan Goswamee: Use of carbon coated ceramic barriers for adsorptive removal of fluoride and permanent immobilization of the spent adsorbent barriers. *SN Applied Sciences*, 2019, Vol.1(634), pp. 1-11.

J C Kuniyal, S U Bhat, H B Singh: Anthropogenic impacts and their management options in different ecosystems of the Indian Himalayan region. *Current Science*, 2019, Vol. 117(3), pp. 358-359.

Chapter in Book

Chandan Tamuly: Study on nutraceuticals of a certain ethno-medicinal plants of Arunachal Pradesh India. Chapter in "*Herbal Medicine in India*", 2019, pp. 533-544.

Deepi Deka, Shashanka Sono, Channakeshavaiah Chikkaputtaiah, Natarajan Velmurugan: Exploring 'omics' approaches: Towards understanding the essence of stress phenomena in diatoms and haptophytes. Chapter in "*Handbook of Algal Science, Technology and Medicine*", 2020, pp. 171-192.

Abstract in Conference

Nirangkush Borah, Chandan Tamuly: Study on *Arenga oblongifolia* (Tashe): Its uses as food product and nutritional value. Abstract in International Conference on Nutraceuticals and Chronic Diseases (INCD 2019). IIT Guwhati, 24-26 September 2019.

Nilamoni Challeng, Moushumi Hazarika, Chandan Tamuly: *Zanthoxylum armatum* C.DC: An important medicinal plant for herbal medicine. Abstract in International Conference on Nutraceuticals and Chronic Diseases (INCD 2019). Dept of Bioscience & Bioengineering, IIT Guwhati, 24-26 September 2019.

Chandan Tamuly, Moushumi Hazarika: Nutraceuticals of a few Ethno medicinal plants of Arunachal Pradesh, India. Abstract in 27th Indian Convention of Food Scientist and Technologist (ICFoST-2020). Tezpur University, 30th Jan-1st February 2020, Vol. 1, pp. 33.

New Members

Dr Prasenjit Manna, Dr Nagamani, Dr Pankaj Bharali, Dr Tridip Phukan and Dr Cinmoy Rajkonwar have joined as members of CSIR-NEIST Scientists group. Heartiest welcome to all members to the CSIR scientific community.

Farewell

The following member(s) of the staff have retired from Council's service on superannuation from CSIR-NEIST on 31 March 2020.

1. Shri Prabin Saikia, Assistant Section Officer